ABSTRACT OF THE DISCLOSURE

A novel multi-resolution block sampling based texture analysis/synthesis algorithm. A reference texture is assumed to be sample from a probability function. The synthesis of a similar, but distinctive, synthetic texture is handled in a process and by an apparatus that first estimates and then resamples the probability function. In order to achieve good and fast estimation of the probability function for a reference texture and in order to retain the texel structural information during the synthesis, a novel concept of block sampling and a corresponding novel texture synthesis scheme based on multi-resolution block sampling is employed. As a result of this novel approach, the computational complexity of the present invention is much lower than that of other approaches to the problem. In addition, for textures that exhibit a high degree of directionality, a process, which integrates estimation of dominant texture direction and the synthesis algorithm is employed to handle directional textures. The dominant direction is used to orient and then control the synthesis process so as to preserve the dominant reference image direction.